

**Before the  
Federal Communications Commission  
Washington, D.C. 20554**

In the Matter of	)	
	)	
	)	EB Docket No. 04-296
Review of Emergency Alert System	)	
	)	

**Comments on Replies of Various Responders**

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## 1. Introduction

Alert Systems Inc. has had the opportunity to study, and do related technical feasibility work for, the nation's emergency information highway including public warning elements over the last 7 years. Study data was gleaned from myriad sources including off-the-record discussions with local EMs, after-incident reports, federal strategies, etc. The comments to NPRM replies contained in this document are intended to give the Commission the benefit of relevant data and findings for use in EAS rulemaking.

Because emergencies occur at someone's local level, our research suggests that any system implementation must facilitate and advance EM goals at all levels—federal, state and local, and take into account research findings concerning human behavior. In these comments we reference our original reply's discussion of:

:8 major categories of stakeholders.

- 5 critical principles / operating practices (from stakeholders).
- 5 basic elements of nation's emergency information highway - 1) sensors, 2) network, 3) information technology / command tools, 4) 'last-mile' channels, and 5) public warning / external resource mobilization / local interagency notification terminal devices.
- 3 key attributes of public warning systems and the features by which these attributes are attained.
- Key attributes and specific features of other basic elements (except sensors) of nation's emergency information highway.
- 4 core processes of incident management.

Our comments on NPRM replies suggest 5 major issues:

- The need for a master infrastructure plan for the nation's emergency information highway.
- The need for an Internet-like architecture.
- The need for more geographically specific messaging.
- The need for statistical baseline performance data and standardized performance measurement metrics so all stakeholders can objectively judge various technical options, measure progress, set meaningful goals, and define success.
- The need for a public / private partnership to maintain the master infrastructure plan and related standards and operating practices as science and technology advance.

If one agrees that system implementation must facilitate and advance EM goals at all levels, then implementation elements should, at a minimum, include:

- Fostering formation of a unified emergency information highway that satisfies all local, state, regional, and national EM needs.
- Making major improvements in the core processes of EM - data assimilation, information management, knowledge formation, and knowledge dissemination (public warning, external resource mobilization, local interagency notification, etc).

- Enabling real-time operation of the core processes, i.e. plume and evacuation route modeling that would allow local EMs to geographically target warnings.
- Fostering unified connectivity solutions that are needed by local EM agencies / unified ICS efforts for training, technical support, logistical and other reasons.
- Encouraging the development of integrated 'battle management' tools and capabilities that are needed to counter terrorism.
- Providing sufficient redundancies in all disaster situations.
- Fully considering the rapid pace of communications technology. Unless solutions to EAS problems also extend to emerging services like WiMax, EAS performance gains will be undermined, and the Commission will be revisiting EAS issues again in a couple of years.

We group replies by stakeholder category. PPW comments reflect several stakeholder categories so they're handled in a separate section. Note that several stakeholder categories are empty; this is because these groups did not respond to the NPRM even though collectively they have insight that is important to the public warning dialogue.

## **2. Comments on Reply of PPW**

### ***2.1. PPW - Kenneth Allen***

Our data and findings generally agree with that of the PPW. We clearly see the need for a broadly inclusive public / private partnership that encompasses all categories of stakeholders. In addition, the mission of the public / private partnership should be broadened to include the larger perspective of the nation's overall emergency information highway.

### ***2.2. PPW - Dr. Peter Ward***

In further support of Dr. Ward's observations, we add the following:

For responsiveness, logistical and other reasons, public warning issues have to be considered within the context of the larger goals cited in the introduction. This larger context reveals additional public warning performance goals that are critical to local EMs. Example: Public warning, external resource mobilization and local interagency notification activities, together, commonly take 8 to 15 minutes by local EM agencies at the onset of a disaster. This timeframe precludes general usage of threat and evacuation modeling to localize or otherwise guide public warnings in real-time. For this reason, public warning system considerations should also factor mobilization and notification. And to expedite these efforts, 'last-mile' channels should couple effectively to local EM information management tools that should couple effectively to myriad information sources upstream the national information highway.

The comment above suggests a critical question: What minimum level of public warning performance is required? Who specifically should set those goals? Absent statistical baseline performance data and standardized measurement metrics, how do we measure

progress or success? And on what foundational principles / practices / philosophies do we set the performance metrics and goals?

We ask the questions above for fear that, absent some objective basis and representation by all categories of stakeholders, rules and technical decisions may be based on lowest-common-denominator consensus or other influence. The approaches to decision-making would likely preclude the full empowerment of local EM agencies and further hinder the application of science and technology to emergency management.

### **3. Comments on Replies of Federal Government Stakeholders**

#### **3.1. FCC Intergovernmental Advisory Committee (FCCIAC)**

In paragraph 2 on page 6, the FCCIAC states, "Until local government and / or public safety agencies (a) have the new EAS equipment and (b) a local radio system to transport it to the broadcasters and CATV firms, they will have to telephone 'the old fashioned way' to get information."

For tax base, training budget, tech support, and other reasons, local EM agencies cannot accommodate separate connectivity solutions for every resource, so they do without. This translates into warning and response delays. Per the FCCIAC, "They can be the last to know about an emergency or warning in their own jurisdiction."

In the last sentence in the paragraph 2, the FCCIAC states, "By having the EAS equipment in the PSAP, they will know the same time the media does." EM agencies should be aware of certain warnings - biological weapons and others - before public announcement.

In the *Consideration: Technology* section on page 6, the FCCIAC discusses the 'disparate equipment, 'mix and match' environment, and interoperability problems of local EM agencies. FCCIAC cites the lack of technical standards. We agree and add that our studies revealed 3 strategic barriers to the unification and modernization of the nation's emergency information highway including its public warning elements:

- Lack of a master plan (includes overall architecture, technical standards, best operating practices). *No stakeholder can fully define or delineate efforts in a sea of interdependencies.*
- Lack of an organization to maintain the master plan, performance metrics and operating practices as science and technology advance. *The infrastructure straddles the authority of all levels of government, and the interests of the private sector and other stakeholders.*
- Lack of policies that enable systematic applied engineering. *Moneys are too fragmented, short-term, and uncertain to fix problems in the core process of emergency management. Policies don't encourage pooled efforts that would yield substantial economies of scale.*

Note the last paragraph of the *Consideration: Funding* section on page 7, the FCCIAC states, "This 'one-time' funding ...". This statement supports the 3<sup>rd</sup> bullet point in the above list of strategic barriers above.

In the *Conclusion* section on page 7, the FCCIAC states, "The typical EBS plan, after long and laborious writing, is obsolete the day after it is printed." This statement supports the 2<sup>nd</sup> bullet point in the barrier list above.

In the *Conclusion* section on page 8, the FCCIAC states, "A viable EAS is a partnership between broadcasters / cable casters, the National Weather Services, local, state and Federal governments. Our research shows that at least 8 categories of stakeholders have something important to say about public warning systems.

### **3.2. FEMA**

In the last sentence of paragraph 2 on page 1, FEMA states, "Because EAS serves both a national and local purpose, it is an essential emergency management and national security asset..." This statement supports the need for a partnership that is representative of at least federal, state and local stakeholders.

### **3.3. Retired Chief of NWS Dissemination Services (RC)**

In the 4<sup>th</sup> paragraph of his executive summary, RC states, "Some improvements have been made, but efforts have been too narrowly focused on using new technology to deliver emergency warnings to those immediately at risk. The critical need, to effectively collect warning information from credible sources and deliver it to those who have the means to deliver warnings in multiple ways, has been largely ignored."

In our discussions, local EMs identified the 'last-mile' warning problem as their biggest concern. They said until the 'last-mile' is fixed, it makes little sense to make major investments in other parts of the nation's emergency information highway. And when the 'last-mile' was sufficiently improved, they wanted integrated information technology tools that would facilitate all 4 of the core processes of emergency management:

- data assimilation;
- - information management;
- - knowledge formation (analysis, visualization), and;
- - knowledge dissemination (public warnings, external resource mobilization, local interagency notification, supply chain management, etc.).

Our studies also show specifically how existing warning systems are a fundamental barrier. Warning and external resource mobilization activities are too slow and cumbersome to make good use of threat and evacuation route modeling and other advanced methods to drive those activities.

Our studies do support that part of the RC statement that says, "The critical need ...has been largely ignored."



Experienced EMs tell us, however, that “collect[ing] warning information from credible sources and deliver[ing] it to those who have the means to deliver warnings in multiple ways” fails to address 2 of the core processes of EM:

- - information management and;
- - knowledge formation.

In some crises, EMs need to combine pre-analyzed work product, local intelligence and other data to formulate and focus response efforts, and that this should be done at the local incident response center. Local EMs may also need to coordinate with mutual-aid partners and get approvals from agencies with jurisdiction over interwoven lands (state forests, Bureau of Land Management, etc.) to make critical decisions. They want communications connectivity that facilitates all 4 of the core processes. These needs dictate an Internet-modeled backbone.

In his executive summary, RC recommends a National Emergency Warning System (NEWS) backbone that is built on the NWS network. Collected study data supports NEWS; however, the core processes of local EM and unified ICS efforts dictate a multi-dimensional flow of information. An Internet-modeled connectivity approach is necessary. This universal backbone, which we call the “ICS Internet” in our NRPM comments, can be hardened and extended by amateur radio packet radio, TV data-casting, etc, for continuity when individual local equipment or links fail. The NWS network should be attached and should be used to harden the ICS Internet.

In the 5<sup>th</sup> paragraph of his executive summary, RC suggests that only NOAA has the training and other requisite capabilities 24/7. NOAA is a very specialized agency with a very specific mandate. But NWS regional offices are not sufficiently staffed to deal with simultaneous threat situations or the multi-disciplinary issues that sometimes arise.

In the 8<sup>th</sup> paragraph of his executive summary, RC states, “DHS would establish a Federal Multi-Agency Working Group to set requirements and advise / oversee operations.” We would suggest that all categories of stakeholders, especially local public safety personnel charged with first response, be directly involved in setting national goals.

In point III.A.21 under specific comments, RC states, the “PPW ... was governed by private sector interests that viewed a Government operation national emergency warning system, specifically NOAA infrastructure and warning systems, as competition.”

Most PPW members were driven by one basic question; can we, all stakeholders together, do better? We found PPW members variously troubled by:

- Public warning and other emergency communications problems on September 11<sup>th</sup> and during other disasters in recent years.
- The long-standing reluctance of the federal government to ask the 'can we do better' question.

- The lack of baseline performance data and performance metrics whereby all stakeholders, particularly the public and local EM agencies, could objectively judge various existing and new warning technology, and composite solutions.
- The lack of government efforts to fill the void of performance data and metrics that are needed to measure progress and determine success.
- A major federal agency that has budget and other interests in an existing warning system, and also many influence channels and high-level relationships in the federal government.
- Major advances in science and technology that were not being applied to emergency management.

Regarding the RC statement, “The PPW was never able to integrate Federal 'partners' into its organization as voting members,” most PPW members favored Congressional-chartering so Federal agencies could participate in a public / private partnership efforts without violating advisory committee statutes.

In point III.B.22, RC states, "Both MSRC and PPW...were too narrowly focused in their concentration on why existing warning systems weren't meeting the public need." Our studies confirm the need for a broader perspective when considering public warning matters. But they also show that the focus should be even greater than that suggested by RC. All 4 of the core processes of EM mentioned above, all phases of disasters, and the larger goals mentioned in the introduction to this document have to be considered. In addition, human response factors are critical in ensuring public confidence and compliance with emergency directions.

In point III.D.29, RC states, "The existing EAS event and location codes structure is sufficient for deliver at sub-county and sub-city areas. More specific area delivery can be left to private sector emergency warning system designers and service provider ...“ Sensor improvements and advanced modeling methods are enabling greater message targeting. Certain local emergency situations involve very limited areas. Existing EAS event and location codes actually discourage the pursuit of advanced technical tools and GIS methods by creating a perception that new warning tools and channels that allow precision geo-coding and the CAP are unnecessary.

In point III.G.41, RC states, "A new architecture has been proposed and demonstrated." NWR transmitters would have to be replaced with digital transmitter as well to support all essential warning system features.

In point III.G.42, RC states, "Coupled to GPS, these devices could know their precise location and react to only those threats in a more narrowly defined area." A number of individual replies express frustration with the interruption of television programs by inapplicable messages. This suggests that precise geo-locating methods may need to be extended to consumer warning terminals.

Undoubtedly, NWS / NWR have improved public safety. NOAA's importance as a source of weather and climatic data is acknowledged and uncontested. But it is

appropriate to periodically question network and 'last-mile' issues in light of new threats like terrorism and new technology. Federal agencies pushed the front lines - barriers around embassies, military responses, and freight inspection - in the war on terror outward from our shores. This force projection philosophy provides greater response times and helps blunt the impact of attacks. Local EMs are the front line of domestic preparedness. Advance capabilities need to be pushed to this front line to counter terrorism and further reduce the consequences of major disasters. For this and economic reasons, NWS / NWR infrastructure and EAS rules should be tailored to the needs of 13,000+ public safety access points and to needs of unified incident command efforts rather than the other way around.

#### **4. Comments on Replies from State Government Stakeholders**

##### ***4.1. North Carolina State Emergency Comm. Committee (NCSECC)***

On page 1, NCSECC states, "It is important that any EAS propagation system the Commission adapts is compatible with the fully-functioning system that we have just installed." This suggests that state and local budgetary concerns will influence the adoption of new technologies and that a full implementation of APAWS will take a number of years without financial assistance

##### ***4.2. National Association of State Chief Information Officers (NASCIO)***

In the reply to NPRM paragraph 31, NASCIO advocates a 100% market penetration rate. There's a vast difference between the *issuance* of warnings and the *delivery* of warnings, however. Consider 'V-chip' usage. Even though the vast majority of TVs have this capability, only a tiny percentage of the public uses this feature. A 100% market penetration rate of warnings can have many meanings. Do the warnings reach people who are asleep, busy, or deaf? Moreover, penetration does not address the effectiveness problem caused by utility power failure. Human behavior suggests that unless the feature is widely accepted by the public, people receiving a warning will search for additional information before complying with directions given by warning.

##### ***4.3. New Hampshire State Emergency Communications Committee (NHSECC)***

In their comments addressing NPRM paragraph 3, the NHSECC states, "...if EAS participation is to be mandated, it is necessary to sharply curtail the number of EAS event codes ....In particular, the National Weather Service originates ..."

The problem of warning duplication, particularly in dynamic situations, cannot be fully resolved with existing warning systems. Many services, particularly those using analog modulation, lack the bandwidth to carry non-overlapping, geographically or audience specific warnings. Historically, partial fixes to EM problems of this type have actually undermined efforts to fully address the problem. Specific Area Message Encoding (SAME) is one example. The only complete solution to this problem is a digital backbone and Internet protocol messaging methods.

In the same paragraph, the NHSECC states, “We believe radio and television stations provide sufficient weather programming through the course of normal programming such that anything other than a weather warning is unnecessary for EAS.”

This statement raises several important issues. It is becoming feasible and desirable to use threat and evacuation-route modeling to deliver geographically specific evacuation information for situations like flash floods. We can envision EM command system tools that would change traffic light patterns to favor specific routes for evacuation and emergency response. These routes will vary by situation. Radio and TV stations are not government agencies and have indicated no interest in becoming lead information providers for local government communication logistics authority and will discourage usage of advanced EM tools and methods. This NHSECC comment raises very serious liability concerns. Radio and TV stations should have to follow the lead announcement of authorities. And government, collectively, should favor new warning system technology that is capable of producing and delivering warnings that are non-redundant, non-overlapping, and geographically and audience specific.

In paragraph 7, NHSECC states, “Any town that needs to access EAS can do so easily by calling State Police.”

The consequences of even a minute of delay in some situations including biological terrorism and chemical plumes are too great for telephone relay methods. The process is subject to human error. It’s difficult to convey geographic information precisely, particularly when the situation is highly dynamic (wind direction). An integrated digital architecture is needed for speed and human error reasons.

#### ***4.4 New Hampshire State Emergency Communications Committee - Chairman Brouder (NHC)***

In the last paragraph on page 1, NHC states, "While frequent messaging is part of their [NWS / NWR] mission, it is incompatible with EAS because of the frequency of use. ... The New Hampshire EAS Plan recommends that participations not include weather-related statements or watches."

Precise geo-coding, better urgency coding, and 'smart' receivers that can reject duplicate message are required to solve the message duplication problem. The message coding methods now employed by NWS / NWR and EAS are fundamental barriers to resolving this and related problems.

In point III.C.1 second paragraph, NHC comments on ComLabs EM-net system. "EM-net requires approximately \$5,000 worth of hardware per station that is basically worthless in an unattended radio or cable station."

An Internet-like backbone would enable usage of common equipment already in place at most sites such as standard computers, and redundant links including satellite Internet service at lower cost. That same computer could automatically insert emergency traffic including text, audio and graphics into the program stream.

At the bottom of page 2 in MSECC comments on NPRM paragraph 23, the MSECC states, "Various agencies each have a small piece of responsibility for the system, but there is no overarching authority..." This statement supports the In discussing "the 'daisy chain' architecture [that] is based on 1950s-era AM-radio technology" on page 2, the MSECC cites, "Numerous recent technological advances – microwave, satellite..."

After September 11<sup>th</sup>, an increasing number of stakeholders have become more strident in their calls for better technology. Local EMs, in particular, say that 1950s solutions are not responsive enough to truly counter terrorism or flexible enough to deal with urban growth in high-hazard coastal areas.

#### **4.5 Michigan State Emergency Communications Committee (MSECC)**

Under "section 27," the MSECC states, "Michigan has no assigned PEP in the State, nor is it reliably able to monitor a PEP station from another state." It further advises, "We feel new technology now needs to be embraced..." We agree and underline that this comment comes from a state.

#### **4.6 Nevada State Emergency Communications Committee (NSECC)**

Comments of this type already addressed.

#### **4.7 Alaska Broadcasters Assoc and State Emergency Communications Committee (ABA/SECC)**

On page 4 the ABA/SECC advocates turn-on / force tune methods, the allocation of special frequencies, and the incorporation of receivers of these frequencies into consumer devices. This approach doesn't provide a means to advise or recall populations who have been dislocated. After a flood or major HAZMAT situation, EMs may need to advise people to stay away for another day or two. They may want to advise that it is OK for people residing in certain geographic areas to return home but not others.

When evacuation orders are given, people tend to fix a plan of action in their minds. Once people begin to implement that plan - load the car, attend to the children, stop for gas, begin the drive to the relatives or hotel in the next county etc – it's very tough to recapture people's attention, and to change or recall a warning.

To solve dislocation and warning recall problems, local transmitters would have to be networked so all EM agencies have access to all transmitters, and all communities would have to have transmitters. Weather radio could be upgraded for operation in this manner but there are no adjacent frequencies for transitioning the service even if NWS was willing to consider this option. We recommended use of the Cell Broadcast / SMS Broadcast capabilities of cellular systems in our comments in part for this reason. Cellular methods provide a shared resource that is already fairly ubiquitous and networked. Consumer and commercial users underwrite the bulk of infrastructure costs.

Cellular ‘last-mile’ methods also provide a number of other attractive features: 1) digital modulation methods that allow forward error correction, encryption / decryption of ‘sensitive’ mobilization information, better message urgency coding; 2) rapid recovery with standard Cells on Wheels (COWs) that include crank up towers, generators and satellite links; 3) applicability to cell phones, automobile telematics and other mobility devices; and 4) other. In addition, the digital communication methods used with modern cellular infrastructure can be easily extended to, and would likely expedite, satellite direct warning solutions in the future.

#### **4.8 Wisconsin State Emergency Comm. Committee - Broadcast Chair (WSECC)**

In comments to NPRM points 22 and 23 on page 1, WSECC states, "All federal stakeholders should 'have an equal vote'." In comments to NPRM points 22 and 23 on page 1, WSECC states, "...it is imperative that a public / private partnership...be established." It further states, "The federal government needs the input of those 'in the trenches'." We agree, as discussed in our original comments.

On page 2, WSECC raises many valid concerns about the carriage mandate. Our technical investigations show there are no practical solutions to these concerns with the current EAS structure and message coding arrangement. The only practical solution is an Internet-like digital backbone.

In comments on NPRM point 29 on page 4, WSECC states, "...we need to be able to send text as part of an EAS alert. ... SECC's are constantly fielding calls asking 'why was only a generic Amber Alert message crawled on the TV, when the voice message had more specific information?'" The technical solution to this problem again favors a digital backbone and argues for an alternate warning system that is digital.

In comments on NPRM point 30 on page 4, WSECC cites the need for a "'bare-minimum' version of the alert, in ASCII text." This need also supports an alternate warning technology based on Cell broadcast methods.

In comments on NPRM point 27 on page 4, WSECC states, "one general Cancellation Code should be adopted." We agree. Our 'smart' receiver work showed that 'all-hazard' systems need the means to recall or replace *individual* messages in some dynamic emergency situations.

#### **4.9 Nevada State Emergency Comm. Committee (NSECC)**

No comment.

## **5. Comments on Replies of Local EM Agency Stakeholders**

### **5.1. Charleston County, SC**

On pages 1 and 2, CCSC states, "...it is imperative that local governments maintain, retain, and preserve their ability, not only to have a significant role in the overall EAS warning / notification process, but also preserve their ability to dictate enhancement associated with the EAS warning process ...". A broadly inclusive public/private partnership would help to provide a "real voice" to all stakeholders.

Charleston County comments are very representative of many EMs and EM agencies, specifically their needs for:

- A vote in public warning and other emergency management policy that is not trumped by federal interests (page 2 and 5).
- Direct local EM agency access to 'last-mile' warning channels (page 4).
- Ability to tailor messages for localized factors (page 2 and elsewhere).
- To deliver messages with greater geographic specificity (pages 2 and 4).
- A seamless (unified connectivity, "Internet model") emergency information highway infrastructure (page 7).
- Policies that favor economies (economic, unified connectivity, common plans and standards) (the broken field of dreams comment on page 8).

### **5.2. City of Alpena**

Alpena states, "...make sure it ... allows them to send alerts directly (without the intervention of a third party) targeted to their residents in the event of a local emergency."

This statement implies:

- SAME coding provides insufficient geographic specificity. (*EMs need more geographic specificity than even that provided by FIPs codes.*)
- Local EMs need access to ALL existing warning systems or an AWAPS to properly reach their citizens.
- Access through intermediates is problematic (delays, human errors).

### **5.3. Milpitas Emergency Services Coordinator**

We agree with Milpitas' desire for at least a 10 times improvement of public warning, but believe that more is possible by taking into account human factors and a range of PAW and APAWS approaches, as described by Reynold Hoover's response to the NPRM.

### **5.4. Municipalities & Municipal Organizations, and City of Cadillac Michigan**

The Commission should note the plea for more localized warnings. EMs need the means to deliver messages according to risk. They need to deliver one specific message to people subject to a plume cloud or flooding, and a different message to people in immediately surrounding areas, without disturbing unaffected populations, particularly those who are infirm, elderly or asleep. This has to be done with the barest of communications bandwidth and without utility power. An APAWS and PAW solution is necessary.

The only practical way to overcome the cable preemption concerns cited here and in the comments of others is through an Internet-modeled digital backbone or by moving exclusively to an AWAPS.

### **5.5. Southeastern Michigan Counties & Municipalities (SMCM)**

On page 1, SMCM states, "...under EAS rules southeastern Michigan counties and municipalities require that all local alerts be funneled through county emergency management directors *by telephone* to the chief engineer of a Detroit AM radio station who has *no obligation* to activate EAS for any local alerts." There is concern about head-end consolidation that is complicating message localization. We agree. .

### **5.6. Orange County Local Emergency Communications Committee (OCLECC)**

Point 2 of the OCLECC advises, "The local station is the best party responsible for translating the EAS message for broadcast..." If a warning message issued by the EM officials is mistranslated or otherwise misstated, would this not open the stations to liability? Would it not open local government liability for lack of preparedness?

In point 3, the OCLECC argues for local control of mandatory EAS codes. If warnings were properly geo-coded and decoders fully observed this geo-coding, non-applicable warnings would not activate local systems whether they were mandatory or not. Local agencies need coding rules that will support unforeseen (September 11<sup>th</sup>) and unique localized (bear roaming town) situations. These issues favor a total revamp of EAS message coding and coder / decoder equipment.

In point 4, the OCLECC states, "There is no way for the EAS LP1 to insure that a given message will be issued and placed on the detail channel, particularly if it occurs during "graveyard" or weekend programming." This statement argues in favor of:

- A major revamping of the EAS structure and coding.
- AWAPS

### **5.7. City of Dubuque, Iowa**

Dubuque's comments, generalized, indicate that EAS codes do not meet all needs of local EM agencies in contacting residents, nor do they contain codes and CAP protocols for mobilizing off-duty and auxiliary public safety personnel. In paragraph 1, Dubuque states, "On several past occasions, we have used our cable emergency alert system to relay instructions to Dubuque residents during the temporary loss of 911 telephone service..."

- The next part of the city's statement says, "and even to assist in the call-up of off-duty police and fire personnel in a very large fire."

### **5.8. Towns of Auburn & Northborough, MA (TANMA)**

TANMA raises carriage mandate, 'roundabout' access to cable channels, and access security issues. These issues again favor the digital backbone and new message coding.



### **5.9 City of Lowell, MA**

Lowell addresses cable access and its approach. Absent better technical alternatives, Lowell and Charter have taken appropriate steps. These steps are not optimal for all disaster situations. Take the case where people are dislocated by an ice storm. The local cable cannot then recall a warning or advise people living in particular areas that its safe to return home. This problem can best be solved by:

- 1) an alternate warning system like Cell Broadcast,
- 2) a digital backbone that connects with all cable outlets whereby low priority messages, "safe to come home," could be scheduled into commercial slots or otherwise over larger geographic areas, or
- 3) a combination of these.

### **5.10 City of Carlsbad, CA**

Carlsbad seeks to maintain local cable access. Our studies show that the only practical ways to protect local interests are (1)an alternate warning system based on Cell broadcasting, and (2) an Internet-modeled backbone to provide the needed connectivity in a cost effective manner.

### **5.11 Lower Hudson Valley Local Emergency Comm. Committee LHVLECC)**

In the *Background* section on page 1, note the LHVLECC sentence containing "... now being touted as an 'All Hazards Network'." The use of the word 'tout' and the quotes around 'All Hazards Network' are indicative of the cynicism of many local EMs who reject the 'All-Hazard' claim. They simply will not activate NWR for many localized emergencies, particularly at night. SAME unnecessarily disturbs too many people, particularly the elderly and infirm.

On page 2 point 2, LHVLECC discusses the Northwest power problem of 2003. The Commission should ask for operations logs on all NWR transmitters during that event.

On page 2 point 4, LHVLECC cites "Too many alerts sent out for things like thunderstorm watches, thunderstorm warning, high wind warnings..."

Unless NWR dramatically improves message coding and fixes other problems, acceptance of NWR will continue to be problematic, regardless of "promotion and educational efforts."

In the last paragraph on Page 3, LHVLECC states, "...a method for entering a FIPS code or ZIP code into the consumer unit must be included."

The vast majority of local EMs and LECCS members recognize the need for greater geographic specificity in warnings. In point C on page 4, LHVLECC states, "...On the local level, county and city officials need to be above to tap into that resource." This reinforces research that EMs want direct, immediate access to shared resources including 'last-mile' channels. This need points to Internet-modeled connectivity.

In point K on page 5, LHVLECC rejects telephone, cellular phones, pagers and other devices. They cite clogging during the 9/11 terrorist attack and the need for very rapid notification for nuclear and chemical situations. These points are not substantiated by current research or live field trials conducted in the US and Europe.

## **6. Comments on Replies from Technology & Technology Service Providers**

### **6.1. XM Radio Inc.**

We commend XM's commitment to public safety. Our studies of the nation's emergency information highway suggest XM could have public warning value in two ways.

As a subscription based service, XM does not provide a universal 'last-mile' solution but if government, collectively, were to lease bandwidth, XM transponders might provide a 'last-mile' public warning channel to low population areas – Alaska, North and South Dakota, Wyoming, Great Lakes and coastal waters, etc.

Our studies show that 'smart' receiver methods are the only practical means for achieving all necessary warning system attributes and features. These methods are applicable to any digital communications channel including those of XM. This leaves two questions:

- 1) is there sufficient signal penetration into rural homes without external antenna?
- 2) how do local EM agencies access the channel?

In the channel access issue, local EM agencies have long needed an Incident Command System (ICS) Internet, a hardened communications backbone. Spare XM transponder bandwidth could help harden an ICS Internet. As a 1-way channel, XM is not a total solution, but when integrated into a system that includes satellite phone or amateur radio packet backup links, it could provide operational continuity in a crisis. A gateway between the ICS Internet and XM network centers could provide both access to the 'last mile' warning channel, and general EM access to data-casting bandwidth in the backbone role.

We have one non-technical concern about XM and other satellite direct radio ventures. Their economic viability has not yet withstood the test of time.

### **6.2. CTIA – The Wireless Association**

Citing a letter from the Lower Hudson Valley Local Emergency Communications Committee, the CTIA recommends that the EAS should not be 'scrapped.' We agree with the CTIA and others that the EAS system should not be scrapped but for another reason – backup systems are needed. Warning systems have varying bandwidth, signal availability, utility-power vulnerability, infrastructure restoration time, and geographic specificity characteristics that have to be considered.

Some EMs told us, "We have to keep existing systems *until we get something better.*" And generally, local EMs and some LECCs need to be presented with various technical

options to get complete or fully formed opinions. A number of local EMs told us, “We’re not technical gurus. We don’t know what’s possible. But we do know what won’t work when we see it.”

On page six of its comments, the CTIA says, “The core EAS works admirably well...” Our studies found no statistical baseline performance data or standardized performance measurement metrics. Without a quantifiable methodology to apply to this statement, we cannot support this assessment. Is “well” good enough to counter terrorism? Does it inhibit the general usage of advanced emergency management tools in real-time?

The CTIA says, “Wireless currently is not arranged as a point to multi-point system...” Alert Systems participated in a test of a point to multi-point mechanism of cellular infrastructure operated by Airedigm in Appleton, WI this past September. A Cell-Broadcast controller (small computer and software) in Ireland (loaned for test) was connected via an Internet tunneling protocol to the switch in Appleton. When messages were input to the controller in Ireland by engineers in the UK via a Web page, the messages appeared on all GSM handsets - 2 Motorola, 2 Nokia and 1 Sony-Ericsson model.

A regional engineering director for a GSM carrier indicated to us that Cell-Broadcast posed largely ‘soft’ cost issues. And a network engineer with responsibility for CDMA infrastructure indicated that enabling SMS Broadcast capabilities is largely one of uploading software.

On pages 7-8, the CTIA says, “[Cellular] networks and technologies are different than those used by existing EAS service providers. ...fitting wireless into the existing EAS may prove difficult without substantial alternations in the existing structure.”

An Internet-like backbone would satisfy cellular connectivity issues with no alteration of existing cellular structure.

Regarding the reliability issue, telecommunications firms work to 99.999 standards that are already well beyond the reliability and redundancy levels afforded by EAS daisy chain signal-relaying methods.

On page 9, the CTIA states, ‘...the majority of handset...would have to be replaced or upgraded.’

Our tests in September, showed most, if not all, GSM handsets already recognize Cell broadcast messages. And according to cellular industry data, 25% of handsets are replaced every year so a majority of CDMA handsets would support this capability in a couple of years.

In addition, standard cellular handsets are not the only warning device option. Alert Systems demonstrated the feasibility of dedicated, ‘fixed-site’ (homes, offices, factories) warning methods using radio paging in the mid-90s. Dedicated devices can provide

virtually all desired warning system features. () This includes urgency coding on individual messages, high level (smoke alarm level when necessary) alerting, simple operation (4 buttons) and precision geographic specificity. With sufficient geographic specificity, ‘fixed site’ devices would not be turned-off during church services, concerts, meetings, and at night. And assuming that warnings were dispatched through all carriers, these devices could auto-roam across all networks for maximum signal redundancy and availability.

The CTIA supports various Blackberrys, e-mails, and pager extensions of EAS. Our ‘smart’ receiver work showed that a lack of important features – geo-coding and other – force an ‘opt-in’ approach to consumer activation. The deaf community largely rejected warning pagers for lack of these features. So long as ‘opt-in’ approaches are the norm, public warning system performance will remain the weak link in the nation’s emergency information highway. And this weak link will continue to block general usage of other methods and technology of immense value to public safety.

We believe the carriers should be partners in public warning system efforts. Costs associated with Cell-/SMS-Broadcasting should be borne by those who benefit. This dictates a cost-apportioned approach to airtime purchases, a unified approach to Cell-/SMS-Broadcast channel assignment, and various technical standards. The Federal government will need to adopt policies, programs, and appropriations language that favor these actions in a manner that satisfies all categories of stakeholders.

The CTIA mentions membership approval to move forward with an Amber Alert Initiative. It would be a huge mistake to move forward without considering the ramifications of another single-threat system on local EM agencies. EM agencies with all hazard missions need integrated, all-hazard solutions. They need equipment with unified communications connectivity and common standards for tax-base, technical support, high personnel turnover / training, unified incident command logistics and other reasons.

EMs need a national Internet-like connectivity solution. This unified connectivity solution would fully address all remaining CTIA concerns (page 8) of “fitting wireless into the existing EAS may prove difficult without substantial alterations to the existing structure.”

Section II of the CTIA response states, “These mass media outlets [radio and TV] are, in fact well-tailored for the distribution of emergency alert and public safety information.” Technically, this statement may be true but wide-area broadcast warnings trigger call floods into 911 centers, sight-seeing that impedes response efforts, cognitive problems (landmark recognition by visitors, elderly confused by too much information), etc. Human response and other factors have to be considered to assess media suitability.

### **6.3. SatStream Systems Corp**

The EAS and other public warning systems are sometimes viewed as separate systems. They’re not. Each of them is just one channel of the ‘last-mile’ portion of the national emergency information highway. A narrow band satellite transponder is not fully

supportive of this highway and all phases of disasters. The demands require connectivity that supports distance learning / unified incident command system (ICS) tabletop exercises, situation awareness, consequence management, supply chain coordination efforts, etc.

Bandwidth of the unified connectivity solution should be sufficient that local EMs have real-time access to all necessary data and resources. In the case of a train derailment, they need wind and rainfall rates for multiple regional sensors, shipping manifests, HAZMAT neutralization requirements, critical infrastructure (hospital, highway congestion) status and other information. They need bandwidth to mobilize specialized resources and for local interagency notification activities.

The unified connectivity solution should support data, audio and video for logistical ease in major crises, the coupling of non-interoperable local 2-way radio systems for unified response efforts, and to support remote or consolidated EOC operations.

Satellite communications methods have value as one of several access channels to an Incident Command System (ICS) Internet. For reliability, local command computers and information technology tools should be transparently coupled to other agencies and resources by multiple modalities. This mix includes wired and wireless terrestrial, amateur packet radio, as well as satellite channels.

#### **6.4. Society of Broadcast Engineers (SBE)**

In paragraph 5, the SBE states, "...all the various stakeholders and related government agencies must be committed and involved. This must be a fully cooperative undertaking." SBE paragraphs 8-11 expand on this point. It will be difficult to fully engage all stakeholders unless: 1) each category of stakeholder, including the federal category, is assured a final approval vote on all work-product; 2) all work-product is judged solely by a set of principles, and 3) federal agencies are bound to this work.

In paragraph 17, the SBE states, "The distrust that broadcasters have for the current EAS system discourages them from voluntary participation." EAS improvements will have to satisfy the bulleted issues in the introductory section of this document to fully dispel the distrust of some stakeholders.

In paragraph 17, the SBE states, "SBE also believes that NWS has to convince broadcasters that it will do a better job of targeting warnings only to those Federal Information Processing Standards (FIPS) codes..." FIPs codes will not satisfy local EM agencies. They need the ability to notify neighborhoods, homes subject to a flashflood, etc. without awakening an entire city at night. The 'smart' receiver methods do this and more.

In paragraph 40, the SBE advocates multi-state regional plans. What happens when a disaster straddles the boundaries of states that observe different regional plans? Do we not then require super-regional plans? Doesn't it make better sense to adopt a master infrastructure plan for the nation by which regional efforts can interface and provide

mutual-aid for all other regions? We need to consider catastrophic terrorism scenarios that may take the combined response capabilities of many regions.

In paragraph 17, the SBE states, "... we do need to find a way to measure real-world EAS effectiveness." It could take years to collect sufficient data to gauge effectiveness in all hazard situations; therefore performance metrics are required

In paragraph 44, the SBE states, "With the integration of NWR into EAS and their increasing role as a provider of **all-hazard** warning..." NWR cannot be a true all-hazard solution until it has all of the attributes and features required.

In paragraph 54, the SBE states, "Emergency managers must have a distribution system they can count on..." EM communications needs go far beyond the distribution of warnings. They need connectivity that supports all phases of disasters - access to various sensors including human intelligence and critical infrastructure status, collaboration links for mutual-aid, mobilization channels, etc. etc. Few local EM agencies can afford or manage myriad partial connectivity solutions. The Commission should favor a universal, Internet-model connectivity solution so more local EM agencies can avail themselves of direct connections to vital resources.

In paragraph 55, the SBE favors satellite-delivered warning approaches. We agree but add that satellites should be but one link of several that connect local EMs to an Internet-like backbone that gives direct access to all data, resources and other EM agencies regardless of state boundaries. All of this and the other core processes of EM and unified incident command efforts require full-duplex capabilities.

Satellite bandwidth should be shared amongst many EM agencies to provide greater surge capacity. Extra bandwidth should facilitate distance learning and multi-agency tabletop exercises in 'quite' times. It should be used to maintain currency of spatial data libraries and other information in case disasters sever all communications channels. It should support electronic supply chain management, telemedicine, remote logistical support, interconnection of incompatible local public safety radio systems, and consequence management functions during the response and recovery phases of disasters.

Satellite bandwidth should be sufficient that advanced EM tools can be put on the front line, local EM agencies. It takes 1 to 4 hours or more (day, night, holiday weekends, respectively) to staff many state and federal EOCs. Plume clouds often reach their diffusion limits in less time.

In paragraphs 59 and 60, the SBE suggests usage of cue and 'Squawk' channels, and satellite radio channels. Local EM agencies need direct access to these channels to be an optimal solution.

In paragraphs 70 and 71, the SBE suggests a 'best means' of coupling various TV and cable systems, and other warning methods. Local EM agencies need an Internet-like solution for reasons given above.

In paragraph 106, the SBE discusses second language issues and advises, "This is a matter best left up to the broadcaster..."

We discussed the liability issue of having broadcasters interpret warnings elsewhere in this document. Here we note that recent influxes of Hmong and other ethnic populations not speaking either English or Spanish are rarely served by any radio or TV station. New 'last-mile' options are needed to deal with this problem.

In paragraph 115, the SBE states, "There is likely not much that can be done to resolve the issues involving satellite and cable systems so that they can become useful means of message distribution for NWR, state and local emergency management."

This statement again argues for new 'last-mile' options.

### **6.5. Midland Radio Corp.**

In point 2, Midland states, "...there is no need nor reason for the Commission to impose its regulatory authority to force EAS to operate as an 'automatic alert system' because NOAA's National Weather Services ('NWS') system is already capable of providing that function..."

We question this reasoning. For message duplication and other reasons, NWS doesn't address all of the needs of the general public or the demands of people who are easily irritated by messages inapplicable to them. Nor does NWS address certain special needs of people who are deaf or hard-of-hearing or experience certain cognitive problems. In point 4, Midland states, "NWS currently originates some 80 percent of all EAS alerts..." Local EMs say this percentage is misleading. They don't use the system in many cases because the system lacks capabilities that are needed for a number of highly localized situations - lost child, industrial fire, hazmat spill, hostage, etc. - particularly at night.

Midland subsequently cites, "...NWS signals reach an estimated 97 percent of the United States population..." There's a vast difference between being able to *issue* warnings and to *deliver* them. There are no performance data offered that's indicative of *delivery*, as none exists.

In point 5, Midland argues against EAS 'despite the ubiquity of receivers...' Midland ignores the ubiquity of cell phones in its comments. The number of handsets that are capable of receiving cell-cast warnings easily outstrips the number of weather radios. Scarborough Research (2002) indicates 62% of all American adults own a cell phone. In point 9, Midland states, "If the Federal government does more to educate [sic] on and inform the public about the NWS system, Midland believes the Commission's goals in this proceeding will be met." 50-years of promotional efforts have not induced significant market penetration, much less usage of the 'auto activate' feature.

## **6.6. Radioshack Corp**

In the last sentence on page 9, RadioShack indicates that it "believes consideration of alternative public alert and warning systems - to the extent such consideration might delay or defer the full and immediate use of the systems that are in place now - is unnecessary and could jeopardize public safety if a terrorist event or natural disaster occurred..."

Our studies show that, in less than 18 months, a warning system based on cell broadcasting would easily match the market penetration rate that weather radio achieved in 50 years. At the same time, such a system would greatly improve for the public the quality of message content and warning effectiveness. This would occur because messages could contain additional information, the absence of which often causes message recipients to ignore messages they do receive: geographic specificity/applicability, urgency coding and other important features that preclude "full use of the national warning systems that are in place today." In addition, it would make advanced tools available and practical for use by local agencies. With modern computing technology many existing methods and technologies could be put into the hands of local EM agencies to counter terrorism and deal with major disasters.

On page 7, RadioShack says, "A growing application of the SAME technology includes the use of the NOAA Network by many states and localities with nuclear or other sites involving hazardous materials, as their primary alert systems to be used in case of an accident." What percentage of people around those sites will receive specific response information within 15 minutes should utility power fail?

On pages 10 and 11, RadioShack discusses "Current Penetration of the EAS and the NOAA Network" and then cites ownership data. We find no statistical data showing what percentage of owners enable the auto-activation feature. Regarding one of the listed examples, day care, operators of day care facilities tell us that, despite rules, they often turn the auto-activate feature off or turn the volume down during nap times. They also admit to sometimes forgetting to re-store settings. False alerts leave kids "cranky" the rest of the day. Other organizations report, "We turn them on when the sky is dark." This won't help in biological, radiological or other situations where the threat is colorless and odorless.

In the last sentence on page 14, RadioShack states, "Given the demonstrated success of these systems, it is unclear why further study on how to reach the public is necessary..." The claim of "demonstrated success" can't be defended on the basis of anecdotal information. And we can counter with failures - the tone generators that trigger the auto-activate feature of receivers didn't work in a transmitter during the Alba River floods.

In the second paragraph on page 16, RadioShack states, "Congress provided \$10 million to improve public awareness and the penetration of the NOAA Network through "the distribution of NOAA radios to schools throughout the country..."



On page 14, RadioShack states, "...that such a [public / private] partnership is unnecessary." We disagree. A partnership of all stakeholders is essential for maintain a master infrastructure plan as science and technology advance and for establishing performance metrics and goals. As Lord Kelvin stated in 1895, "If you can not measure it, you can not improve it."

On page 6, Radioshack cites NWS advantages including "900 transmitters covering ninety-seven percent..." Signal coverage alone is insufficient to ensure high degree of system effectiveness.

### **6.7. Pappas Telecasting**

No comment.

### **6.8. Nat. Assoc. of Broadcasters & Assoc. of Max Service TV Inc (NABMST)**

On page IV of the Executive Summary, NABMST states, "...The Commission does not have the authority to require local broadcasters to make their facilities available to local emergency managers" This is another reason for favoring a public / private partnership that is representative of all categories of stakeholders. Such a group is likely to foster interaction and better understanding of the problems of public warning, resulting in satisfactory allocations of tasks and responsibilities among stakeholders.

### **6.9. Satellite Broadcasting & Communications Assoc. (SBCA)**

At the bottom of page 2, "SBCA urges the FCC to examine EAS *not* in isolation, but in the context of *all* emergency information distribution pathways."

This statement supports the statements of local EMs and other stakeholders.

On page 3, SBCA "...counsel against mandating satellite EAS participation if such participation would provide only marginal improvements over the *status quo*." We see no reason to mandate very expensive retooling of satellite services when an alternate warning system like cell-casting would immediately provide major improvements with relatively small amounts of money.

### **6.10. National Cable & Telecommunications Assoc. (NCTA)**

On page 4, NCTA favors "...single federal entity take lead responsibility..." "Quite a few responders to the NPRM urge FCC and/or DHS leadership. These comments suggest a belief that a single favored agency has administrative authority to take bold steps establishing new systems. It is far more complex than that. Federal agencies, individually, are limited to rules consistent with their legislative authorization and developed in accordance with applicable information and principles. This suggests a multiple agency solution, one which could accommodate input from non-federal stakeholders, as well as agencies that made no comment but which are greatly affected by the outcome of the Commission's decisions- CDC, EPA, NRC, to name a few.

On page 4, NCTA states, "...we believe that existing EAS equipment is working effectively and ... should not be rendered obsolete by modifications of the nation's public warning systems." The MSRC survey of state EAS performance shows that the EAS is seriously flawed. How does NCTA defend this statement in light of the MSRC survey of state EAS operations?

Our technical work shows that it's quite possible to significantly improve the effectiveness of public warnings. Shouldn't public safety interests override concerns about the rendering obsolete of existing systems?

On pages 8 and 9, NCTA discusses override and warning localization issues associated with cable systems. As noted earlier, satellite or microwave distribution, or Internet bypass, plus local alert insertion would appear to be the most practical options for this problem. MSRC and the cable association should study and propose options to a public / private partnership charged maintaining a master plan for the nation's emergency information highway. And absent a perfect warning system solution, we see the need for an alternate public warning method.

#### **6.11. Cox Broadcasting Inc.**

On page 5 section III, Cox addresses the local carriage of warning mandate issue. They cite "Broadcasters have a long standing tradition of being the first responders to an emergency" and other arguments in favor of a voluntary approach.

We commend the media's contribution to public safety, but when newsrooms are unmanned at night or remotely operated, warnings can't wait.

#### **6.12. Capital Broadcasting Co. Inc. (CBC)**

CBC raises cable override issues, including specific local examples, that we address elsewhere in this document.

#### **6.13. American Cable Association (ACA)**

ACA raises cable override issues that we address elsewhere in this document.

#### **6.14. Consumer Electronics Assoc. (CEA)**

The CEA defends weather radio citing many 'Public Alert™' benefits. The system lacks critical features

The last point on page 7, the CEA states, "...Public Alert™ devices allow and are compatible with many proposals to use a 'Common Alert Protocol'..." NWR is not designed to make use of certain critical aspects of CAP, including precise geo-coding. In addition, NWR lacks features that are needed for external resource mobilization and local interagency notification.

On page 9, the CEA says, "Manufacturers will adjust their products in response to marketplace demands, and ... new equipment and functionalities will appear built upon the EAS/NWR foundation." Public Alert™ improvements are too little too late compared

to new communications methods that employ digital modulation, forward error correction, spread spectrum and other advanced communications methods. Our studies show that NWR imposes barriers to greater warning effectiveness and the larger goals cited in the introduction of this document.

#### **6.15. Harris Corp.**

Harris emphasizes the need for MCAP. As we noted in our initial NPRM comments, CAP is step in the right direction but lacks a number of essential features. MCAP recommendation should be considered with external resource mobilization and local interagency notification issues in the development of a 'Super-CAP.'

#### **6.16. SWN Communications Inc. (SWN)**

On page 3, SWN seeks a "policy and regulatory environment that would encourage ... a slave and reverse cell towers" method. We believe SWN is referring to SMS cell-phone messaging that uses handset location to direct warning messages. Events in Europe show that SMS methods are not suitable for bulk messaging in emergency and rock concert situations.

In addition, location information in 'network-based' location methods could degrade substantially in certain disaster situations.

'Opt in' (subscription-based) unified messaging services such as offered by SWN raise major database management, 'big brother,' human error, and other issues.

In addition, EMs indicate a hesitance to activate certain subscription-based systems that involve significant database and location data costs. And expenditure approval activities can delay efforts.

#### **6.17. Ohio Assoc. of Broadcasters (OAB)**

On page 8, the OAB states, "These judgments [which messages are relevant to listeners / viewers] ... simply are not capable [of] being made on a uniform basis given existing technology." The Commission should not use this argument to favor voluntary participation but rather as an argument to completely modernize the EAS structure and coding.

At the top of page 11, the OAB recommends "an overall framework, so that EAS, taken as a whole at the national, state and local levels, works seamlessly." To satisfy local EMs, the overall framework has to include the entire national emergency information highway per the 1<sup>st</sup> larger goal cited in the introduction to this document.

In section F on page 13, OAB says cable overrides are 'one of the most frustrating ... aspects of the current system.' Satellite or microwave distribution, or Internet bypass, plus local alert insertion would appear to be practical options for this problem. MSRC and the cable association should study and propose options to the public / private partnership () charged with maintaining a master plan for the nation's emergency

information highway. Absent a suitable solution, we see only one other option - an alternate public warning method.

**6.18. North Carolina Assoc. of Broadcasters (NCAB)**

Issues addressed elsewhere.

**6.19. Charter Communications**

Charter argues for EAS rules that allow technical innovation in connectivity. They offer workable means for interfacing existing EAS structure to small cable systems. The call for more flexible connectivity is common to many stakeholders - local EMs, critical infrastructure operators, service providers including communications carriers and various media services, and others. The only practical means for addressing all connectivity needs is to replace the PEP/LP structure with an Internet model () and modern digital communications protocols. Charter's SSSD could be interfaced easily with an Internet model (). The interface computer could also acknowledge operation and message receipt, and log or automatically report compliance.

The Internet model addresses an enormous array of local, regional, state and national coordination, mutual-aid, logistics, situation awareness (sensors / human intelligence of every type), real-time threat modeling, disaster supply chain management, and other readiness needs, simultaneously. It's the only economically viable solution for meeting all connectivity and mission needs. Retention of the PEP / LP structure will perpetuate fragmentation of the nation's emergency information highway at the expense of readiness for the next terror attack and responsiveness to future disasters.

**6.20. California Broadcasters Assoc. (CBA)**

In point 2 on page 2, the CBA states, "This proceeding should not become bogged down or sidetracked into detailed examination of technologies that could be employed in EAS nor attempts to assess hypothetical advantages of one technology over another."

We have to ask, just when should we ask whether there might be a better solution? Is the CBA willing to face families of people killed in a catastrophic terrorism event and say they favored expediency - another band-aid to a clearly limited system? Hopefully, the CBA did not intend this meaning.

We proposed performance measurement methods, a basis including critical principles / operating practices, and other recommendations in our NPRM comments to overcome the 'hypothetical advantages' problem cited by CBA. The absence of baseline performance data and objective measures of performance has been an excuse to perpetuate the status quo for decades. How should DHS, or the Commission, or any stakeholder make any decision objectively regarding public warning systems including "the development of open structures that will embrace future technologies without threatening the basic nature of EAS...?"

The CBA advise the Commission to avoid ‘hypothetical advantage’ comparisons but then offers no practical solution to real EAS problems - duplicate messages, urgency coding and other human response issues.

In point 5, the CBA raises the issue of the MOU between DHS and NWS. This issue poses an indelicate question. Is the MOU so untouchable that it should it be allowed to stand in the way of potentially superior public warning technology, or to deflect change or challenge of older methods? Shouldn’t it be reviewed periodically in light of advances in science and technology?

In point 19, the CBA states, “The integration of new communications technologies into the EAS...” This may be shortsighted; the EAS does not provide all of the connectivity needed by local EMs and unified ICS teams to perform the essential core processes of emergency management. Moreover, other solutions may be developed which alleviate some of the burden expressed by broadcasters maintaining the EAS system one of several ‘last-mile’ channels that provide public warnings.

In point 21, the CBA states, “As part of its oversight of the EAS, the FCC, in partnership with industry, should constantly evaluate other communications technologies and their usefulness to the EAS.” Technology decisions should be made on the basis of what best protects the public; EAS is one of many technologies offering broadcasters to continue providing public service to their communities.

#### **6.21.      *LogicaCMG***

On page ii, LogicaCMG states, “Cell broadcast is a proven technology available through both GSM and CDMA networks.”

As one of only a couple firms in the world to have Cell broadcast controllers that operate with base stations of all makes, LogicaCMG can make this statement authoritatively.

#### **6.22.      *Rural Cellular Assoc. (RCA)***

RCA rejects SMS and Cell-casting warning methods, citing a White Paper by Mr. Crowe. SMS findings are supported by a number of other studies but ASI can show or has demonstrated methods for circumventing the Cell-casting issues.

Dedicated warning devices (cradle wall-mount) with precision geographic addressing, urgency coding and other features overcome cell phone handset limitations including alarm amplitude, distinctive alerting, message blockage by call activity, power-disabling, message priority, disturbing unaffected people, and configuration issues. By dispatching warnings through all carriers, cell-phone roaming mechanisms provide redundancy and maximize signal availability. ‘Smart’ devices can drive EAS decoders, electronic signage, computer network, sirens in rural parks and on factory floors, and devices used by people who have hearing disabilities. These methods are known to work from our tests of ‘smart’ receiver methods using radio-paging channels. Dedicated devices can be assembled from high-volume cellular chip-sets on handset production lines.

Many of the methods above could be built into or up-loaded to cell-phones. They're applicable to automobile telematics systems. It's strictly a matter of setting standards by the collective of stakeholders, and a bit of leadership.

On page 9, RCA / Crowe state, "Cell broadcast messages are not acknowledged..." This is true of weather radio, EAS, sirens and telephone auto-dialer methods. On the other hand, it's quite feasible to have a percentage of the 'smart' warning devices discussed above acknowledge a warning. 'Critical infrastructure and institutional' versions of 'smart' devices are an obvious choice. Confirmation of message transmission and delivery, the reading of the message, as well as local utility power and other status information would help expedite EM efforts.

The RCA / Crown state, there's "little incentive to implement cell broadcast because there is no way for carriers to charge..." European studies suggest that public safety is probably the best way to open commercial applications for cell-broadcast including localized road conditions, marine weather, transit arrivals / departures, business promotions, etc.

In addition, Cell broadcast account management is relatively simple. With Commission assistance, certain Cell broadcast sub-channels can be reserved for public safety. This reserved bandwidth could be purchased in bulk

- 1) with a small portion of federal appropriations for domestic preparedness,
- 2) by the EM community, collectively (cost apportioned),
- 3) through 911-like phone line fees, or)
- 4) other means. There's no need for the public to maintain individual accounts that burden the carriers. This also eliminates database management and 'big brother' database concerns at the same time.

Regarding "the quantum of emergency alerts is based on the National Weather Service (SAME) systems." Weather forecast office personnel can draw watch or warning boxes around storm cell on their terminals of the Advance Weather Information Processing System (AWIPS). The vertices of these boxes could be delivered to the GIS and other command tools of local agencies in near real-time. Overlapping warnings could be eliminated by software means. The event vertices would be useful in TV graphics. With an Internet-like backbone, they would facilitate localized warnings and precision message targeting by alternate warning methods and digital broadcast services. There are no technical barriers to doing so.

In the matter of message length on page 10, we submit several observations. The first obstacle for public warnings is getting people's attention. Cell broadcast can provide the essential initial alert and basic information. If additional information is needed, users can then supplement this with whatever additional means survives the disaster or are available to them – radio, TV, Internet, etc.

It's also possible to segment long text messages across multiple sub-channels. Tagged and numbered, these segments can be reconnected at the receiver. In the case of

presidential announcements, multi-media cellular services are on the horizon. And these announcements should be offered in brief text form, in any case, for people who have hearing disabilities, or operate in noisy environments.

In section C on page 10, RCA states, “For an emergency alert message to be transmitted, the EAS provider must have an interface with all systems required to convey the message.” The equipment provider, LogicaCMG who we respond to elsewhere in this document, has already done this.

LogicaCMG’s cell-broadcast controller and the unified national emergency information highway architecture proposed at the end of this document, together, satisfy the access control and other interface issues raised on page 11.

Regarding RCA comments favoring NWR, emergency management requires 2-way communications whereas NWR is 1-way.

RCA questions the practicality of dynamically changing SAME information in weather radios that are integrated into cell-phone handsets. Why integrate weather radio circuitry when Cell broadcast is inherent the cellular phone infrastructure and many handsets?

#### **6.23. *Corr Wireless Communications, LLC***

Issues are addressed elsewhere.

#### **6.24. *American Teleservices Assoc. (ATA)***

ATA addresses the alternate public warning system (APAWS) issue, specifically advocating a telephone auto-dialer method. But they don’t address Voice over Internet Protocol (VoIP), call screening and forwarding, local trunk capacity, and other problems that seriously limit effectiveness.

#### **6.25. *Association of Public Television Stations (APTS)***

APTS's Next Generation Interconnection System (NGIS) described on page 4 would be a good way to harden a digital backbone, such as the Incident Command System (ICS) Internet that we recommend in our NPRM comments.

As well as helping to distribute warnings, APTS's data-casting capacity should be used to harden communications between local command tools and the ICS Internet. Though data casting provides a 1-way channel, the direction is favorable. Data that is inbound from the ICS Internet is typically much greater than outbound information. Combined with a low-speed 2-way Internet link, data casting would support many incident management functions. Together, these links invite distance learning, multi-party tabletop exercises and other services for local EM agencies.

#### **6.26. *Intrado Inc.***

On pages 3 and 4, Intrado discusses “opt-in / opt-out” issues. These issues arise from message duplication and delivery problems. Until the causes of these problems are fixed

– limited geographic specificity of warnings, and the need for storage of warnings in individual local warning devices – public buy-in will be limited.

#### **6.27. *KOMP / KXPT / KENO / KBAD (KKKK)***

In the first sentence of paragraph 1 on the 2<sup>nd</sup> page of comments, the KKKK states, "Federal funding must be provided..." A later KKKK statement in point 4 page3 states, "...it is important that the systems be state of the art . . . ." We suggest that when stakeholders are given solutions (technical, communications protocols, and operating practices) that fit with Internet connected and computerized operating methods, financial concerns may dissipate, especially when more expensive local, single purpose EM public alerting systems are sometimes partially financially supported by local industry, especially those in sectors which especially seek risk reduction.

On the second page the KKKK states, "Establish within the Homeland Defense Agency a position of EAS... Other federal agencies... must be included in this cooperative effort. On the state and local level, the Chief's / Sheriff associations, Governor's office, law enforcement at all levels... The local, state and National Broadcasters must be included..." We agree.

In point 3, on the 3<sup>rd</sup> page, the KKKK states, "Establish a 'Back Bone'..." The vast majority of stakeholders in the nation's emergency information highway see the need for an Internet-modeled backbone.

In point 7, on the 4<sup>th</sup> page, the KKKK states, "...the excessive number of repetitive alerts have totally turned off the broadcasters..." We suggest that as long as warnings are geographically coded only with SAME and FIPs, this problem cannot be fixed.

#### **6.28. *Primary Entry Point Advisory Committee (PEPAC)***

PEPAC dismisses alternate warning systems known to have limitations, but it may be unaware of Cell-/SMS-Broadcast. Because no system is perfect when judged on all relevant factors affecting performance--- reliability, capacity, etc.-- alternate systems should be also judged by a composite of their strengths and weakness. Alternate systems can offer complementary benefits to existing systems, which are all too often "readjusted" to serve additional purposes for which they were not originally designed, nor ideally suited.

In section II.E.31, PEPAC suggests a "un-mute-on-EAS function." Precise geo-targeting, urgency coding, and other features are also needed to address human response issues. Alone, an un-mutable function would force listeners to tolerate inapplicable messages, which they might consider equivalent to spam. This could cause widespread activation of the un-mute function or other undesirable human reactions.

#### **6.29. *Hearst-Argyle Television Inc. (HATI)***

In the 3<sup>rd</sup> paragraph on page 1, HATI states, "Hearst-Argyle's stations frequently find that they have begun to report on emergencies before EAS is even activated." EMs sometimes refer to emergency management as a "war against time." Alert propagation



with daisy chain methods is too slow particularly in highly dynamic emergencies. As we stated elsewhere in this document, this raises serious questions of liability, it undermines local EM authoritativeness, etc. HATI's statement supports the need for a more responsive and flexible EAS structure.

At the top of page 2, HATI states, "When stations receive state or local EAS alerts, they are in the best position to know whether the alert is genuine or has been sent in error ... whether it is timely and relevant to the local community..." These problems arise largely from EAS structure and message coding limitations. They point to the need for major changes rather than Band-aid improvements of the EAS system, specifically an Internet-like digital backbone and new message coding protocols.

In the middle of page 2, HATI states, "In fact, the evacuation order only pertained to a relatively few residents in low-lying rural areas of a small part of the county." This problem cannot be fully addressed so long as EAS is limited by SAME and FIPS geographic targeting methods.

In the first paragraph on page 3, HATI states, "...many Hearst-Argyle stations' viewing areas include more than one state. ... Conflicting demands of multiple state or local emergency managers for broadcast time with inconsistent or conflicting information could create chaos during an emergency ..."

This statement recognizes that people can be confused by too much information, or they can put parts of two different stories together and reach an incorrect conclusion. Cognitive issues arise with new residents and travelers who aren't familiar with local landmarks. They include people with early stage dementia or who are subject to panic attacks. HATI statement favors the addition of graphics and video capabilities to EAS warnings and a digital communications backbone that supports these capabilities (). It favors new warning technology that can target people by precise geographic area ().

#### **6.30. FM Station KNLR**

On page 1, KNLR states, "One of the serious problems with weather alerts received from the National Weather Service is that during an active storm a station may receive many activations from NOAA Radio which of course are transmitted serial and are very disruptive." It's nearly impossible to properly address this problem with the current EAS / NWR structure and message coding.

#### **6.31. Liberty Corp**

Like a number of other stakeholders, Liberty advises "...the Commission should not adopt a mandatory transmission systems..." Several stakeholders argue that they cover important public safety issues in their news segments to solve message duplication and for other reasons. But captioning isn't always provided for local news.

#### **6.32. Stations WTOP (AM), WTOP-FM, and WXTR (AM) (SWWW)**

In their summary section, SWWW states, "...the current EAS systems is not only outdated but its infrastructure and architecture are fatally flawed and must be replaced. ...

Moreover, the current hierarchical, daisy-chain ...does not work as reliably as necessary, especially when up-chain stations go off the air, or choose not to air a warning because the warning is not geographically relevant to them.” The first sentence of page 4 reads, “...problems with the EAS are systemic and cannot be repaired with band-aid solutions or simple ‘upgrades’.” In the second paragraph of page 3, they advocate a ‘new system [that is] secure, robust and redundant... It should be software-based so that updates can be readily performed...”

We would add that this new solution should also meet the needs and interests, or at least not hinder them, of other stakeholders, particularly local EM agencies. It should also support, or at least not discourage, future warning and other EM methods as much as possible. Together, these points favor a structure and message coding protocols based on Internet methods.

In the last paragraph on page 4, SWWW states, “...while NOAA should be permitted to continue to operate its Weather Radio system, NOAA’s infrastructure should not be used as part of the new system.” . SAME and FIPs coding is a major barrier to more flexible geographic message targeting and usage of GIS methods to drive warnings. This, and the lack urgency coding and other features, preclude solution of message duplication problems. However, NOAA’s data communications network and satellites should not be dismissed but rather connected to an Internet-modeled backbone for EM. EM bandwidth needs would be given precedence over research during crises. The network should be operated per a master plan .

In first sentence on page 5, SWWW states, “The creation of any kind of new public / private partnership to help oversee alerting would only add more ‘red tape’ and bureaucracy...” Our studies suggests that a lot of the “‘red tape’ and bureaucracy” problems and stakeholder concerns would disappear if everyone had an objective means of weighing various technical solutions, a master infrastructure plan, and suitable partnership bylaws.

In comments on NPRM paragraph 24, SWWW states, “...broadcasters should be required to carry all emergency warnings of a certain threshold...” We agree that thresholds are required; but to balance broadcaster, public and other interests as new public warning options and EM science evolve, other tools for highly targeted public warning need to be deployed.

### **6.33. Comlabs on behalf of EM-Net State Warning Alliance**

The comments of Comlabs suggest they view public warnings as a separate activity, rather than an integral part of the core processes of EM – data gathering, information management, knowledge formation, and knowledge dissemination (including public warnings). These processes are inextricably interwoven. EMs need solutions that address all of these process during all 4 phases of disasters –

- 1) mitigation,
- 2) preparedness (training, etc.),

- 3) response (warnings, external resource mobilization, local interagency notification, supply chain management, etc.), and
- 4) recovery.

To the extent that EM-Net hinders formation of a unified emergency information highway that would enable all of these processes in near real-time, we cannot support EM-Net in its present form. As we've indicated elsewhere, the efficiency of external resource mobilization and local interagency notification as well as public warning activities have to be improved to make usage of threat and evacuation modeling and other advancement methods and tools generally practical during initial response efforts.

EM-Net does have merit, however, particularly if incorporated into a more comprehensive Internet-modeled backbone and for providing redundancy in network access.

On page 7, Comlabs rejects the ideal of a public / private partnership, saying it "has been tried and there hasn't been enough meaningful support from either the private or public side to make this concept viable."

Study data including personal experience suggests that it was not that stakeholders weren't supportive of a partnership but perhaps need a partnership which provided:

- 1) suitable bylaws that assured all categories of stakeholders a fair vote on work product that wasn't then trumped or ignored by federal interests,
- 2) warning system performance metrics based on defensible principles / operating practices whereby all participants could objectively judge various technical solutions, and
- 3) meaningful warning system performance goals.

#### **6.34. Sage Alerting Systems (SAS)**

On page 3, Sage expresses concern for EAS security / spoofing. This concern favors a digital backbone having encryption features.

On page 3, Sage states, "The new EAS system needs to be much more selective in its reach of the public. ... The new system needs to be addressable down to an individual home or device so that localized alerts for such things as chemical plant release, terrorist incidents, flash floods, etc. can be brought quickly and profoundly to those who need it without disrupting the lives of those who are not affected." This recommendation requires new coding methods.

On page 6, Sage states, "We believe that a redundant, rugged and reliable backbone network must be created not only between the federal government and the PEP stations, but between all emergency management locations, media outlets, cell phone carriers and the like." This supports our recommendation for an ICS Internet.

In discussing the localization of warnings at the top of page 12, Sages states, "The activation equipment therefore should be placed to provide the maximum localization."

In practice, this statement argues for putting 'activation equipment' in the hands of local EM agencies. It's very difficult to describe the precise location of a dynamic situation - plume cloud, flashflood, etc. - by verbal means. Local EMs need command tools with GIS, unified messaging and other features that can drive all warning channels.

**6.35.      *TFT, Inc.***

While it acknowledges that various alternative warning methods would make EAS more robust, TFT states, "... it would not be in the public interest to invest in a newer system right now that may offer later technology but take a long time to be operable. A new system that could be adopted would take years to deploy, be expensive for taxpayers to fund, and would itself be obsolete by the time it were operational." With this rationale, public warning capabilities would never improve. Cell broadcast could be widely deployed in a very short timeframe. In addition, an institutional mechanism to adopt systematic changes incorporating new technology would partially address any problem of future obsolescence.

**6.36.      *Seven Ranges Radio Co. Inc. (SRR)***

SRR favors improvements to the NWS / NWR system with manned NWR radio stations in the FM broadcast band. SRR favors RDS auto-tune methods that could be employed as vehicles traveled from place to place. These suggestions pose major economic and new technical problems, most of which are discussed elsewhere in this document.

**6.37.      *Verizon***

With respect to broadcast technology alternatives, we find Technical Service Bulletin – 114 of the Telephone Industry Association of interest. It states, "This Telecommunications Systems Bulletin is intended to be used on any wireless system capable of broadcasting a message designated as an emergency to a group of users (e.g., using broadcast short message service)." It's dated December 1999. Industry members have previously recognized the potential of Cell-Broadcasting (GSM) and SMS Broadcasting (CDMA).

**6.38.      *Special Note on Cell broadcast***

A number of providers of messaging / mobilization services misuse the term SMS Broadcasting to mean blasting multiple SMS messages, one to each cell phone in a database. SMS blasting methods have been tried for warning and other purpose in Europe and are known to be problematic for the cellular infrastructure. But these arguments do NOT apply to true Cell-Broadcast or SMS-Broadcast methods.

**6.39.      *Global Marketing Solutions, Inc.***

Global offers to extend a satellite direct kiosk marketing system to public warnings. Global does not discuss signal penetration or external antenna issues that are generally needed for satellite direct methods. With an Internet-modeled backbone for connectivity, this 'last-mile' channel could help deliver warnings to "airports, bus and rail stations, shopping malls ... theatres, hotels and billboards."

#### **6.40. Digital Alert Systems, LLC (DAS)**

DAS offers a means of embedding additional text information into the EAS header and End-of-Message tone waveforms for conveyance down the daisy chain. This method does not solve all EAS problems, however. It would not be needed with an Internet-like digital backbone that is so badly needed by local EMs for many other reasons.

### **7. Comments on Replies from Stakeholders with Risk and Liability Interests**

#### **7.1. Entergy Nuclear Northeast**

The Commission, other federal agencies and Congress should particularly note the last page of Entergy's comments. They mention a Joint Vision 2020 document produced by the DoD. Many stakeholders find the lack of a forward-looking master plan for the nation's civilian emergency information highway to be troubling. A master plan is basic to national strategies and the implementation of operational philosophies like DoD's C4ISR. It's critical to inoperability and long-term readiness.

Entergy also recognizes the need to encourage new technology in their *Additional Recommendations* section. Collected study data found that many stakeholders express this need in some way though they can't or won't provide specifics. To get more definitive answers, we:

- 1) pose various technical solutions to them
- 2) applied the critical principles / operation practices mentioned earlier to collected information.

### **8. Comments to Replies from Stakeholders with Hazard Research, Education & Policy Missions**

No NPRM Replies were filed by representatives of this category of stakeholders in the nation's emergency information highway—chemical and transportation industries, nuclear plants, .... Some comments of local officials reflect concerns about liability exposure.

### **9. Comments to Replies from Stakeholders with Auxiliary Service Missions**

No NPRM Replies were filed by representatives of this category of stakeholders in the nation's emergency information highway.

### **10. Comments to Replies from General Public & Public Advocate Stakeholders**

#### **10.1. Peter Sheerin of Foster City**

Mr. Sheerin's comments support statements we've heard from experienced Public Information Officers. They indicate that widespread usage of the Internet, cell-phones

and other communications technology by the general public is raising expectations of EM agency performance.

**10.2. Telecommunications for the Deaf; Assoc. of Late-Deafened Adults; Deaf & Hard-of-Hearing Consumer Advocacy Network; National Assoc. of Deaf; Self-Help for Hard of Hearing People (DHH)**

On page 4, the DHH states, "...events like the unfortunate September 11 attacks or the recent sniper shootings in the D.C. metropolitan area are not specifically including ..."

While NWR message coding includes a 'nonspecific' alert, it does not convey either the specific situation or a recommended action to people who are deaf. This is critical in situations where utility power eliminates the TV option for additional information.

Some emergency situations dictate different response actions depending on geographic location relative a flashflood, train derailment, etc. Depending other the specific situation, the appropriate recommendation could be shelter-in-place, evacuate by one of several routes, or other. NWR / EAS message coding are fundamental barriers to properly fixing this problems.

On page 5, the DHH urges, "...a single, unified list of 'triggering events' that would require broadcasters to provide information in visual form..." It's virtually impossible to anticipate every type of situation and new threat. This problem can only be solved by separating message urgency from the type of situation in message coding. Tornado watches have to be coded as <event type> tornado and <urgency> watch.

On page 8, the DHH states, "...a broadcaster may treat the story as 'news' that does not warrant the extra expense of captioning." In such cases, neither EAS nor NWR serve people who are deaf or hard-of-hearing. It also raises liability and consistent policy / practices issues. It also demonstrates the need to put an Internet-like backbone and integrated command tools in the hands of local EMs to facilitate information dissemination efforts.

**10.3. Cellular Emergency Alert Service assoc. (CEASa)**

With our permission, CEASa adopted some of ASI's initial reply but in doing so referenced a Recommendation that was not included in the CEASa's reply. The last sentence in paragraph 1 of CEASa Recommendation 7 on page 5 says, "per the list in Recommendation 5." This reference is to Recommendation 5 in ASI's NPRM comments.

**10.4. Rehabilitation Engineering Research Center on Telecommunications Access (RERC)**

In the last paragraph on page 4, RERC states, "Carriage of EAS alerts should be made mandatory, but there needs to be better encoding of the information to trigger mandatory alerts..."

Retention of the existing message coding approach is becoming ever more difficult to defend. Virtually all, new communications systems employ digital modulation methods that support forward error correction, encryption, multi-path mitigation, spectrum efficiency and other advanced technical methods. Communications in digital form supports text, text-to-voice, text-to-Braille and other communications modalities that solve accessibility problems. It supports graphics that can help with cognitive disabilities and minimize consumer annoyance with program interruptions.

In our technical feasibility studies on ‘smart’ receivers, ASI considered still other disabilities - backlighting color of displays for color blindness, font size for blurry vision when people are suddenly awakened at night, alert tone frequencies that address high-frequencies hearing losses, etc.

In discussions and focus groups, people with hearing disabilities said they couldn’t sleep with multiple pillow vibrators – one for the weather radio, another for the baby alarm, etc. We found few interface standards that were common to all devices.

In one field trial, we put a short-range transmitter in our ‘smart’ warning receiver prototypes to trigger remote strobe lights and other devices. This was well received and people wished that all of their aids could be networked in this fashion.

At the end of the 1<sup>st</sup> paragraph on page 8, the RERC states, “Location-base systems that are being built into mobile network for E9-1-1 implementation should be utilized for allowing greater precision in the delivery of alerts based on the geographic location of the mobile device.” Warnings that are not geographically precise are generally a greater burden on people with disabilities.

In the 2<sup>nd</sup> paragraph on page 8, the RERC states, “We suggest that alerting...be done with a unique signal...”

Distinctive ringing and urgency coding needs are included in the essential attributes / features list (Recommendation 5 in ASI’s comments). We urge the Commission to exclude alert tones and patterns that are uniquely indicative of public warnings and mobilizations from custom ring services and offerings.

#### **10.5. *Wireless Rehabilitation Engineering Research Center on Mobile Wireless Technologies for Persons with Disabilities (WRERC)***

On page 12, WRERC says, “. the Wireless RERC has identified three key approaches - policy / regulatory interventions, ...” These approaches have to be aggressive enough to force changes in several organizations with vested interests in the status quo.

Our studies found no technical barriers to making ‘smart’ warning devices that would mainstream people with common disabilities in public warning efforts. Unfortunately, there’s no reasonable guarantee of sufficient market when every state and locale has it’s own unique technological roadmap. To stimulate the application of science and

technology to emergency management, we first need a master plan for the nation's emergency information highway.

**10.6. *Deaf & Hard-of-Hearing in Government, Self-Help for Hard-of-Hearing People, & Assoc of Late Deafened Adults (DHH)***

DHH discusses hidden crawl, part-time newsrooms and other issues. These problems favor alternate warning methods, mandatory carriage of local warnings, and direct access by EMs to EAS channels.

**10.7. *American Foundation for the Blind (AFB)***

On page 3, AFB lists examples of "on your screen" information that is not reliably voiced by the announcer. In most cases, the 1<sup>st</sup> question raised by a warning is whether it applies to this locale. People who are blind can have a particularly difficult time determining this. Few disasters conform to SAME, and event location details are sometimes lost in broadcast announcements issued on short notice. Pre-fixed warning areas (SAME) have to be replaced with polygons and ellipsoids to enable more strategic warning methods. Then, only those people who are directly affected will be disturbed. And the public, particularly people with vision disabilities, will automatically know when a warning is applicable.

**10.8. *National Center for Missing & Exploited Children (NCMEC)***

On page 10, NCMEC states, "Shortly, NCMEC will launch its own notification system that will re-distribute Amber Alerts through a satellite-based message and warning system ..."

We appreciate NCMEC's desire to fill a communications void. But we have to caution that the expense and work of implementing single-purpose systems may discourage formation of the unified communications connectivity system that would vastly improve the core processes of EM. In adopting "its own notification system," NCMEC may not yet appreciate how other public safety technology could expedite neighborhood canvassing and other steps that are sometime needed prior to issuing an AMBER Alert. Unified communications and geo-targeted messaging would improve external resource mobilization methods that would expedite search efforts.

**10.9. *Dwight Stewart***

Mr. Stewart finds EAS tests to be an annoyance and requests a reduction in test frequency. A 2-way digital backbone is needed to solve this problem.

**10.10. *Henry B. Ruhwiedel - Additional Comments HBR***

On page 1, Mr. Ruhwiedel discusses slowness of message propagation, warning holds through commercials (up to 7 minutes). On pages 2-4, he discusses EAS deficiencies including high-power broadcast methods that don't reach just the "right" people.

On page 4, Mr. Ruhwiedel advocates an alternate warning system, specifically text messaging through cell phones. His comment echoes statements by experienced public



information officers (PIOs) that instant messaging and mobile communications are raising expectations of EM efforts. They aggravate rumor control problems. And rumors are catalysts for lawsuits. This problem can only be mitigated by significant improvements in the collective performance of the nation's public warning systems.

**10.11. Douglas S. Simar**

Mr. Simar favors use of digital methods to expand and resolve a number of EAS issues, and suggests this digital system be "tightly integrated into systems with the DHS and the military." He supports SMS text messaging methods.

## **11. Summary of Comments on NPRM Replies**

The comments of other EAS responders reconfirm problems found in previously collected study data. What we do not find are recommendations that would produce a win-win scenario for all stakeholders. We also do not find clear fundamental principles whereby the Commission has the means to objectively judge various solutions.

The Commission should note that comments in the Local EM Stakeholder category are presented indirectly through municipal and county city managers and local communications committees. Some of these comments are also representative of the views of risk managers in the *Organizations with Risk and Liability Interests* category. They don't begin to reflect the needs of local EMs, which include integrated all-hazard solutions, unified connectivity, and major improvements in core processes.

Collected data, plus the critical principles / operating practices cited in our initial reply to the NPRM point to a unified 'battle management' architecture. This Internet-modeled architecture would satisfy myriad stakeholder needs, including EAS while advancing NIMS (National Incident Management System), Health Alert Network and other federal and state programs administered by agencies which did not submit responses.

ASI's 'smart' receiver work proves the feasibility of a highly effective alternate public warning method. Some 'smart' receiver methods are applicable to some of the various broadcast services, but if a service cannot support all features, only limited improvements in warning performance from such a service are possible.

The Internet modeled architecture and 'smart' receiver methods together foster or support the 'larger EM goals' cited in the introduction.